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PANORAMIC CAMERA SYSTEM

Yoshiharu Tenmyo

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PANORAMIC CAMERA SYSTEM

[Panorama kamera shisutemu]

Inventor:	Yoshiharu Tenmyo
Applicant:	Canon, Inc.

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Claim

A panoramic camera system characterized in that in a panoramic camera system configured with a camera which is equipped with an auto focus controller and a power zoom controller and performs exposure and film-winding operations in response to a release signal, a power zoom mechanism for changing the field angle of said camera, and an electric camera platform for rotating said camera by a prescribed angle at a time, a locking instruction signal generation means which generates said signal after the first auto focus control operation is completed after panoramic photo taking begins and a locking means which locks the zoom setting

of the lens until a series of panoramic photos is completed in response to the input of said locking instruction are provided.

Detailed explanation of the invention

Industrial application field

The present invention pertains to an improvement of a panoramic camera system comprising a camera which is equipped with an auto focus controller and an auto winder, a power zoom mechanism for changing the field angle of said camera, and a drive mechanism (electric camera platform) for rotating [the camera] by a prescribed angle at a time while halting it for a fixed period of time.

Prior art

In the case of a conventional camera, use of a zoom lens which magnifies the focal distance of the pickup lens is becoming popular, and an operation method in which a technology referred to as a power zoom mechanism for moving [the lens] automatically using a motor built into the camera's main body or the lens barrel is adopted accordingly in the recent years.

Problem to be solved by the invention

Incidentally, there was a problem that when a pickup lens containing the power zoom mechanism of the aforementioned conventional example was utilized for panoramic photo taking where photos were taken by rotating the camera by a prescribed angle at a time, as the focal distance of the pickup lens was changed for each photo, the magnification of the images of the panoramic photo object focused on the film changed for each shot, resulting in an unnatural panoramic photo due to those discontinuous parts in the photo.

In the light of the problem of the aforementioned conventional example, the purpose of the present invention is to present a panoramic camera system by which the focal distance of a pickup lens does not change for each shot during panoramic photo taking using a camera equipped with a power zoom mechanism.

Means to solve the problem

Configuration of the present invention designed to achieve the aforementioned purpose will be explained using Figure 1 which shows an application example.

In the case of the present invention, in a panoramic camera system configured with camera 1 which is equipped with auto focus controller 16 and power zoom controller 17 and performs exposure and film-winding operations in response to a release signal, a power zoom mechanism for changing the field angle of said camera 1, and electric camera platform 2 for rotating said

camera 1 by a prescribed angle at a time, locking instruction signal generation means (a panoramic photo deeming circuit in the example illustrated) 15 which generates locking instruction signal P6 after the first auto focus control operation is completed after panoramic photo taking began and a power zoom locking means which locks the zoom setting of the lens until a series of panoramic photo taking is completed in response to the input of said locking instruction signal P6 are provided.

Function

When the panoramic shot mode is selected, the focal distance of the power zoom mechanism is set, the zoom setting of the lens is locked by the power zoom locking means provided in power zoom controller 17 in response to locking instruction signal P6 from locking instruction signal generation means 15 after the first auto focus control operation is completed by auto focus controller 16 in response to the release signal, and the zoom setting of the lens is maintained until the series of panoramic photo taking is completed as electric camera platform 2 is driven.

Thus, because the focal distance of the pickup lens never changes for each shot during the second shot and thereafter, and the pickup magnification does not change each time, a discontinuous photo can be prevented.

Application example

An application example of the present invention will be explained below based on Figure 1 and Figure 2.

In Figure 1, 1 represents a camera, and 2 represents an electric camera platform to which said camera is attached.

Said electric camera platform 2 is capable of rotating by a prescribed angle at a time while halting for a fixed period of time; and it comprises field angle/image quantity setting device 21, panoramic controller circuit 22, and electric camera platform driver 23; whereby, field angle/image quantity setting device 21 outputs panoramic setting signal P1 to panoramic controller circuit 22, and panoramic controller circuit 22 controls electric camera platform driver 23 according to pickup complete signal P3 from pickup controller circuit 12 which drives pickup motor 13 in response to panoramic setting signal P1 and pickup incomplete signal P2 from pickup load 11 to be described later which is provided on the camera's 1 side in order to output lens release enable signal P4 to camera's 1 side.

Panoramic photo deeming circuit 15 which decides whether the panoramic shot mode is implemented release enable signal P4 is input from panoramic controller circuit 22 provided on the aforementioned electric camera platform's 2 side is provided on the side of said camera 1 so as

to input panoramic signal P6 from panoramic photo deeming circuit 15 to auto exposure controller 18, auto focus controller 16, and power zoom controller 17, respectively. Furthermore, release signal P5 from shutter release switch 14 is input to auto exposure controller 18.

Said auto focus controller 16 is a controller which performs an auto focus control operation, that is, to bring up the pickup lens to a prescribed position and lock the pickup lens under said condition, in response to auto exposure completion signal P7 from auto exposure controller 18 during the first shot for the panoramic photo taking as panoramic signal P6 indicating the panoramic shot mode is inputted; and the aforementioned locking of the pickup lens is released for the first time upon the completion of the panoramic photo taking without carrying out the auto focus control operation during the second shot and thereafter.

Said power zoom controller 17 is used to fix the lens zoom position at the default focal distance set by field angle/image quantity setting device 21 of electric camera platform 2 during the first shot of the panoramic photo taking in response to the input of panoramic setting signal P6 from panoramic photo deeming circuit 15 which indicates multiple shots are involved; and the lock of the pickup lens is released for the first time upon the completion of the panoramic photo taking without carrying out the power zooming during the photo taking of the second shot and thereafter.

In addition, said auto exposure controller 18 is for carrying out an auto exposure control operation during the first shot of the panoramic photo taking when aforementioned release signal P5 and panoramic signal P6 are both inputted, and said condition is maintained from the second shot until the panoramic photo taking is completed.

Operations of the present application example with the aforementioned configuration will be explained using the flowchart shown in Figure 2.

First, when the panoramic photo mode is not selected by a panoramic mode setting means (not illustrated) provided on electric camera platform's 2 side, and if multiple shots are not set by field angle/image quantity setting device 21 on the electric camera platform's 2 side, shutter release switch 14 is activated to carry out an auto exposure control operation in response to photometric signal S1 so as to drive the lens by means of an auto focus control operation (AF); and the normal photo taking is carried out next through a shutter release operation.

Next, when the panoramic shot mode is selected, and multiple shots are set by field angle/image quantity setting device 21, after an aperture setting and a shutter speed are set by auto exposure controller 18 according to photometric signal S1 as a result of the first stroke of the operations of shutter release switch 14, the auto focus control operation (AF) is carried out by auto focus controller 16 so as to drive the lens and lock the focus to lock the zooming, and the first shot is taken as the shutter is released. Upon confirming the completion of said pickup operations, the film is wound automatically by pickup motor 13, [the camera] is rotated by a

prescribed angle by electric camera platform driver 23 on electric camera platform's 2 side which is interlocked with the panoramic shot mode, and the shutter is released again. At this time, the photo taking is carried out while the focus locking and the zoom locking used during the aforementioned first shot are maintained. During the second shot and thereafter, said operations are repeated in sequence, the panoramic shot mode is finished at the point at which the number of shots initially set is reached, and the focus locking and the zoom locking are released.

Furthermore, although the aforementioned application is configured as such that the panoramic shot mode setting is carried out at electric camera platform's 2 side, it may be configured to have the panoramic mode setting means, that is, [means] to set the number of shots to be taken and calculate the pickup field angle or an angle for a full-angle shot, on the camera's 1 side.

In addition, although the focus locking operation is carried out immediately after the photometry in the aforementioned application example, said timing should be implemented after the first shot is taken and before the second shot is taken, and the timing may be implemented after the winding of the film is completed also.

Effect of the invention

As explained above, because the zoom setting position is locked in response to the locking instruction signal from the locking instruction signal generation means after the first auto focus control operation is completed after the panoramic photos began, and the zoom locking is maintained until the series of panoramic photo taking is completed, the present invention offers an effect that a continuous natural-looking photo when seen as a panoramic photo, for which the pickup magnification of the panoramic photo object focused on the film every time a shot is taken does not change, can be obtained.

Brief description of the figures

Figure 1 is a block diagram of an application example of the panoramic camera system pertaining to the present invention, and Figure 2 is a flowchart for explaining its operations.

1 ... camera; 2 ... electric camera platform; 12 ... pickup controller circuit; 13 ... pickup motor; 14 ... shutter release switch; 15 ... panoramic photo deeming circuit; 16 ... auto focus controller; 17 ... power zoom controller; 18 ... auto exposure controller; 21 ... field angle/image quantity setting device; 22 ... panoramic controller circuit; and 23 ... electric camera platform driver.

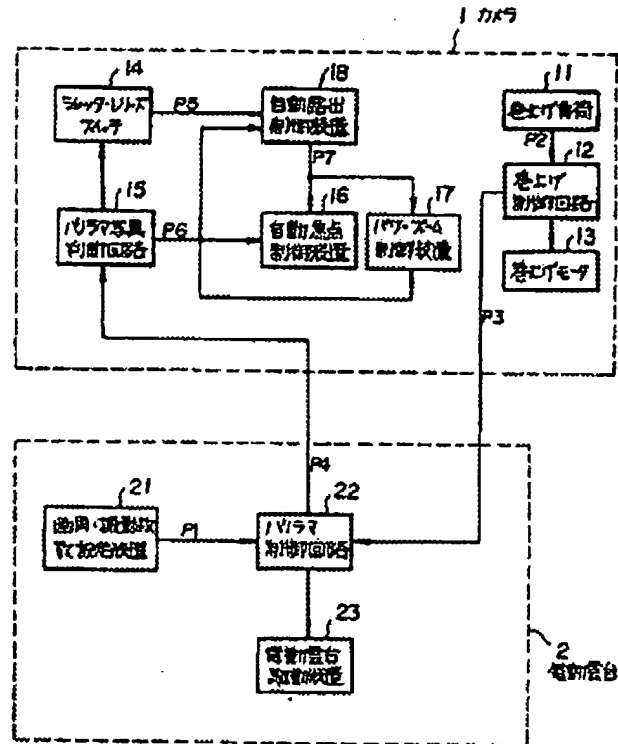


Figure 1

- Key:
- 2 Electric camera platform
 - 11 Pickup load
 - 12 Pickup controller circuit
 - 13 Pickup motor
 - 14 Shutter release switch
 - 15 Panoramic photo deeming circuit
 - 16 Auto focus controller
 - 17 Power zoom controller
 - 18 Auto exposure controller
 - 21 Field angle/image quantity setting device
 - 22 Panoramic controller circuit
 - 23 Electric camera platform driver

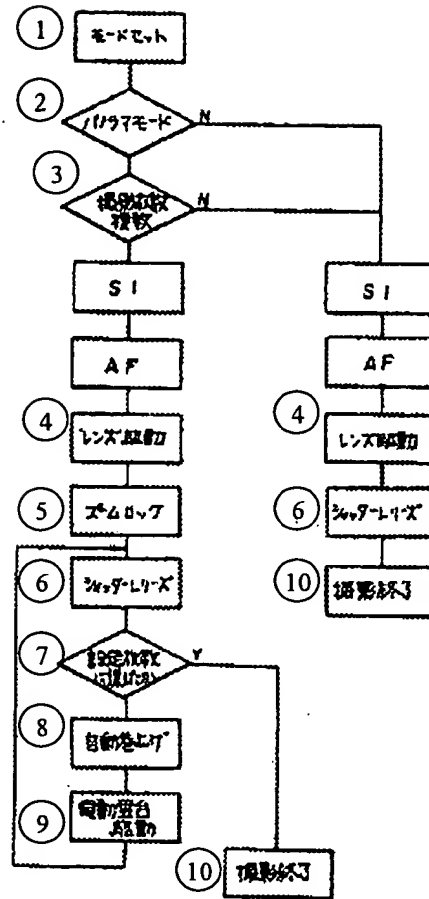


Figure 2

- Key:
- | | |
|----|--------------------------------|
| 1 | Set mode |
| 2 | Panoramic mode |
| 3 | Multiple pickup images |
| 4 | Drive lens |
| 5 | Lock zoom |
| 6 | Release shutter |
| 7 | Number [of shots] set reached? |
| 8 | Auto pickup |
| 9 | Drive electric camera platform |
| 10 | End photo taking |